CLAIMS

1. Composition comprising at least one protein which is differentially expressed in a virulent strain as compared to an avirulent strain of the genus Mycobacterium.

2. The composition of claim 1 wherein said strains are selected from the group consisting of *M. tuberculosis, M. bovis, M. avium, M. africanum, M. kanasasii, M. intracellulare, M. ulcerans, M. paratuberculosis, M. simiae, M. scrofulaceum, M. szulgai, M. xenopi, M. fortuitum, M. chelonei, M. leprae* and *M. marinum.*

3. The composition of claim 1 or 2 wherein said protein is differentially expressed in *M. tuberculosis* and in *M. bovis.*

4. The composition of claim 3 wherein said virulent strain is *M. tuberculosis* H37Rv or *M. tuberculosis Erdman* and said avirulent strain is *M. bovis* BCG.

5. The composition of claim 3 wherein said protein is differentially expressed in *M. tuberculosis* H37Rv and *M. tuberculosis Erdman* as compared to *M. bovis* BCG.

6. The composition of any one of claims 1 to 5 wherein said protein is isopropyl malate synthase (Rv3710), s-adenosylmethionine synthase metK (Rv1392), succinyl-CoA synthase α-chain sucD (Rv0952), oxidoreductase of aldo/keto reductase family (Rv2971), oxidoreductase (Rv0068), elongation factor G (Rv0120c), uridylate kinase (Rv2883c), ABC-type transporter (Rv1463), short chain dehydrogenase/reductase family protein (Rv1856c), 1,3,4,6-tetrachloro-1,4,-cyclohexadiene hydrolase (Rv2579), phosphoribosylaminoimidazole carboxylase catalytic subunit (Rv3275c), hypothetical protein (Rv2557), and hypothetical protein (Rv3407), hypothetical protein (Rv3881c), hypothetical protein (Rv2449c), hypothetical protein (Rv0036c), hypothetical protein (Rv2005c) or transcriptional regulator (Crp/Fnr family) (Rv3676).

7. A composition comprising at least one differentially expressed protein as defined in any one of claims 1 to 6 wherein said differentially expressed protein is biochemically, biophysically and/or recombinantly modified.

8. A composition comprising an antigenic fragment of the protein as defined in any one of claims 1 to 7.

9. A fusion protein comprising a protein as defined in any one of claims 1 to 7 and/or the antigenic fragment as defined in claim 8.

10. A fusion protein comprising at least two proteins as defined in any one of claims 1 to 7 and/or (an) antigenic fragment(s) as defined in claim 8.

11. The fusion protein of claim 9 or 10 wherein said fusion protein comprises an immunostimulatory molecule.

12. The fusion protein of claim 9 or 10 wherein said fusion protein comprises a molecule capable of optimizing antigen processing.

13. A composition comprising at least one fusion protein as defined in any one of claims 9 to 12.

14. A nucleic acid molecule coding for a protein as defined in claim 7, the antigenic fragment as defined in claim 8 and/or a fusion protein as defined in any one of claims 9 to 12.

15. A composition comprising at least one nucleic acid molecule as defined in claim 14 and/or at least one nucleic acid molecule coding for any of the proteins as defined in claims 1 to 7.

16. An antibody or a fragment or a derivative thereof directed against the protein as defined in any one of claims 1 to 7, the antigenic fragment of claim 8, the

nucleic acid molecule of claim 14 or the fusion protein as defined in any one of claims 9 to 12.

17. A composition comprising at least one antibody as defined in claim 16.

18. A composition of any one of claims 1 to 8, 13, 15 and 17 which is a pharmaceutical composition further comprising, optionally, a pharmaceutically acceptable carrier.

19. The pharmaceutical composition of claim 18 which is a vaccine.

20. The composition of any one of claims 1 to 8, 13, 15 and 17 which is a diagnostic composition further comprising, optionally, suitable means for detection.

21. A method for the production of a vaccine against a virulent strain of the genus Mycobacterium comprising the steps of

(a) recombinant expression of a differentially expressed protein as defined in any one of claims 1 to 7, an antigenic fragment as defined in claim 8 or the fusion protein of claims 9 to 12, and

(b) combining said recombinantly expressed differentially expressed protein, antigenic fragment or fusion protein with a pharmaceutically acceptable carrier.

22. A method for the production of a vaccine against a virulent strain of the genus Mycobacterium by combining a vector comprising a nucleic acid molecule encoding a differentially expressed protein as defined in any one of claims 1 to 7 an antigenic fragment as defined in claim 8 or the fusion protein of any one of claims 9 to 12 with a biologically acceptable carrier, wherein said nucleic acid molecule in said vector is placed under the control of an expression control sequence.

23. Use of a nucleic acid molecule encoding a differentially expressed protein as defined in any one of claims 1 to 7, an antigenic fragment as defined in claim

8 or the fusion protein of any one of claims 9 to 12 for the method of claim 21 or 22.

24. Use of at least one of the proteins as defined in any one of claims 1 to 7, an antigenic fragment as defined in claim 8, a nucleic acid molecule as defined in claim 14, a nucleic acid sequence encoding a differentially expressed protein as defined in any one of claims 1 to 6, a fusion protein as defined in any one of claims 9 to 12 or the antibody as defined in claim 16 or fragments or derivatives thereof for the preparation of a composition for the treatment of a Mycobacterium induced disease.

25. Use of at least one of the proteins as defined in any one of claims 1 to 7, an antigenic fragment as defined in claim 8, a nucleic acid molecule as defined in claim 14, a nucleic acid sequence encoding a differentially expressed protein as defined in any one of claims 1 to 6, a fusion protein as defined in any one of claims 9 to 12 or the antibody as defined in claim 16 or fragments or derivatives thereof for the preparation of a vaccine for vaccination against a Mycobacterium induced disease.

26. The use of claim 24 or 25 wherein said Mycobacterium induced disease is selected from the group consisting of tuberculosis, leprosy, tropical skin ulcer, ulceration, abscess, granulomatous (skin) disease, pulmonary disease, lymphadenitis, and cutaneous and disseminated disease.